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ROCKY MOUNTAIN SPOTTED FEVER (EASTERN TYPE)

VIRUS RECOVERED FROM THE DOG TICK *Dermacentor variabilis* FOUND IN NATURE

By L. F. BADGER, *Passed Assistant Surgeon, United States Public Health Service*

The American dog tick *Dermacentor variabilis* has a wide distribution in the eastern part of the United States and is the common tick in the localities in Maryland and Virginia where the eastern type of Rocky Mountain spotted fever has occurred (1). Maver (2) reported experimental transmission of the western type of Rocky Mountain spotted fever by the *Dermacentor variabilis*, and Dyer (3) reported the experimental transmission of the eastern type of the disease by the same tick.

During the tick seasons of 1930, 1931, and 1932 attempts were made to recover the virus of spotted fever from the *D. variabilis* found in nature. Several thousand ticks were collected in the States of Maryland and Virginia. In 1930 an occasional guinea pig, upon which ticks had fed or into which ticks had been inoculated, failed to react to subsequent inoculations with the virus of spotted fever. Such evidence alone was regarded as too meager to warrant any conclusions. In 1931, in addition to such occasional apparent immunity produced in guinea pigs by feeding or inoculating ticks, the vascular and nodal lesions, characteristic of spotted fever, were found in the brain of a guinea pig in the fourth generation from the animal inoculated with ticks. This strain of virus was contaminated and discontinued before other criteria for the identification of a strain of spotted fever virus could be fulfilled.

In 1932, efforts to obtain and prove a strain of spotted fever virus from ticks infected in nature met with success. This strain of virus obtained from ticks was proved to be one of spotted fever by the following facts: It produced in laboratory animals symptoms identical with those produced by a known virus of spotted fever (eastern type); it produced the same brain lesions as those produced by the spotted fever virus; it produced in the serum of the rabbit and the monkey agglutinins for *B. proteus* X₁₉; a complete cross immunity with the virus of Rocky Mountain spotted fever was demonstrated.

PROCEDURE

Approximately 200 ticks (*D. variabilis*) were collected from a farm in Virginia on which a human case of the disease had occurred. The ticks, which were not numerous on this farm, were collected a few at a time during the period July 12 to September 2, 1932. The unfed and partly engorged ticks were fed, in lots of 3 to 15, on guinea pigs. When the female ticks had become engorged, the ticks were removed, washed with alcohol and ether, emulsified in normal salt solution, and inoculated intraperitoneally into fresh guinea pigs. Those female ticks which were engorged, at the time of collection, were emulsified in normal salt solution after being washed with alcohol and ether, and inoculated intraperitoneally into fresh guinea pigs. In some of the tests the ticks were incubated at 37° C. for 24 or 48 hours before being allowed to feed, or before being inoculated.

Seven male and two unengorged female ticks, collected August 8, were incubated for 24 hours at 37° C. and allowed to feed on guinea pig 8014. On the eighth day after the application of the ticks the morning temperature of the guinea pig was 40° C. The ticks were removed. Each of the male ticks was feeding while one of the females had fed to engorgement and become detached. The other female had died, apparently without feeding.

THE VIRUS OBTAINED BY FEEDING OF THE TICKS

On the first day of fever, guinea pig 8014 was killed and bled from the heart. The cardiac blood was cultured and inoculated into two fresh male guinea pigs. Each animal received intraperitoneally 4 cc of the whole cardiac blood. The culture media inoculated with the blood revealed no growth for seven days, and each guinea pig reacted to the inoculation with fever. From these guinea pigs a strain of the virus of Rocky Mountain spotted fever was established.

THE VIRUS OBTAINED BY INOCULATING THE TICKS

The female tick which had fed to engorgement on guinea pig 8014, after having been incubated at 37° C. for 24 hours, was washed with ether, then alcohol, and again with ether. It was then emulsified in sterile salt solution and inoculated, intraperitoneally, into two fresh guinea pigs. Culture media inoculated with this emulsion remained sterile. The guinea pigs inoculated with this tick emulsion became febrile after a period of incubation of three days in one, and four days in the other. From these guinea pigs a strain of Rocky Mountain spotted fever virus was established. This strain of virus has now been carried in guinea pigs for 19 generations.

IDENTIFICATION AS A STRAIN OF ROCKY MOUNTAIN SPOTTED FEVER VIRUS

Clinical manifestations and gross pathology.—The reactions produced by this tick virus in the guinea pig, rabbit, and monkey are identical with those produced by the eastern type of spotted fever virus (1).

Microscopic pathology.—The brains of seven guinea pigs which had reacted to the tick strain of virus were examined microscopically. Vascular and nodal lesions like those seen in Rocky Mountain spotted fever and typhus were found in five of the seven brains examined.

Weil-Felix reaction.—This tick virus produced in the sera of rabbits and monkeys agglutinins to *B. proteus* X₁₉. Complete agglutination in the titer of 1:160 was observed.

Cross immunity tests.—There is a complete cross immunity between the virus obtained from the tick and the western and eastern spotted fever viruses. There is no cross immunity between this tick virus and the viruses of endemic and epidemic typhus.

Cultures inoculated with the cardiac blood of animals from which transfers were made were consistently negative.

Results of a few of the cross immunity tests are shown in the accompanying tables.

Table 1.—Guinea pigs immune to Rocky Mountain spotted fever (eastern type) inoculated, along with four fresh guinea pigs as controls, with the tick virus: The immune spotted fever guinea pigs failed to react (immune), while each of the fresh animals reacted.

Table 2.—Guinea pigs immune to the tick virus inoculated, along with four fresh guinea pigs as controls, with the virus of Rocky Mountain spotted fever (western virulent): The immune tick virus guinea pigs failed to react (immune), while each of the four fresh animals reacted.

Table 3.—Guinea pigs immune to a virus of endemic typhus inoculated, along with four fresh guinea pigs as controls, with the tick virus: The immune typhus guinea pigs reacted (non-immune), as did the fresh animals.

Table 4.—Guinea pigs immune to the tick virus inoculated, along with two fresh guinea pigs as controls, with the virus of epidemic (European) typhus: The immune tick virus guinea pigs reacted (non-immune), as did the fresh animals.

TABLE 1.—Cross immunity tests between the virus recovered from ticks and the virus of Rocky Mountain spotted fever (eastern type). Daily temperature records

Day after inoculation	Guinea pigs inoculated with the tick virus					
	Fresh guinea pigs				Immune Rocky Mountain spotted fever guinea pigs (eastern type)	
	8457	8458	8459	8460	T. M. 904	T. M. 907
0	39.0	39.3	39.3	39.0	38.8	39.2
1	39.5	39.1	39.0	39.0	38.6	38.5
2	39.5	39.5	40.0	39.5	39.0	38.8
3	39.8	39.0	39.8	39.6	38.8	39.2
4	39.5	39.3	39.5	39.5	39.0	39.0
5	40.0	39.5	39.8	39.5	39.0	39.0
6	40.0	39.0	40.4	39.1	39.2	39.0
7	41.3	39.4	39.6	39.2	38.6	38.8
8	41.0	40.5	39.5	40.0	38.8	38.4
9	41.0	40.5	40.0	39.0	38.0	38.0
10	40.7	(¹)	40.2	39.5	39.0	38.5
11	39.0		40.5	40.5	38.2	38.0
12	(²)		41.0	40.5	38.0	38.0
13						
14			40.8	40.2	38.0	38.0
15			(²)	39.8	38.2	38.0
16				40.0	39.2	39.0
17				38.8	39.2	39.0
18				39.5	39.0	38.8

¹ Killed for transfer.

² Dead.

³ Killed for pathological examination.

TABLE 2.—Cross immunity tests between the virus recovered from ticks and the virus of Rocky Mountain spotted fever (western type). Daily temperature records

Day after inoculation	Guinea pigs inoculated with Rocky Mountain spotted fever virus					
	Fresh guinea pigs				Immune tick virus guinea pigs	
	316	317	318	319	9003	9105
0	39.3	38.9	38.5	39.0	39.0	39.0
1	38.5	39.0	38.8	39.3	39.0	38.5
2	38.2	38.0	38.3	38.5	39.0	39.0
3	39.5	40.0	40.0	41.0	39.0	39.0
4	¹ 40.5	40.0	40.2	39.5	38.2	38.0
5	(²)	¹ 41.0	¹ 40.7	¹ 41.0	39.3	38.5
6			(²)			
7		40.8		41.0	39.0	39.0
8		40.8		41.2	39.0	39.0
9		40.6		40.0	39.5	38.8
10		39.8		39.3	39.5	38.8
11		38.0		(³)	39.3	39.0
12		(³)			39.3	39.0
13					39.4	38.5
14					39.0	38.5

¹ Scrotal involvement.

² Killed for transfer.

³ Dead.

TABLE 3.—Cross immunity tests between the virus recovered from ticks and the virus of endemic typhus. Daily temperature records

Day after inoculation	Guinea pigs inoculated with the tick virus					
	Fresh guinea pigs				Immune endemic typhus guinea pigs	
	9355	9356	9357	9358	W 3016	S 9100
0	38.6	38.5	39.2	38.5	38.8	39.4
1	39.5	38.8	39.7	39.0	39.5	39.5
2	39.3	39.0	39.0	40.5	39.5	39.0
3	40.2	39.5	40.5	40.0	39.5	39.5
4	40.0	40.0	39.8	40.2	39.2	39.3
5	41.2	40.0	40.5	40.5	39.5	40.0
6	40.8	(1)	40.0	49.8	39.5	40.2
7	40.5		40.0	39.5	40.3	39.5
8	40.8		39.5	(2)	40.0	40.0
9					40.4	40.4
10	40.0		39.0		40.6	39.5
11	39.3		39.0		40.0	39.0
12	(2)		(1)		39.8	38.5
13					38.6	38.5
14					39.0	39.0

¹ Killed for transfer.

² Died.

³ Killed for pathological examination of brain.

TABLE 4.—Cross immunity tests between the virus recovered from ticks and the virus of European (epidemic) typhus. Daily temperature records

Day after inoculation	Guinea pigs inoculated with the epidemic typhus virus			
	Fresh guinea pigs		Immune tick virus guinea pigs	
	B 2147	B 2148	9421	9422
0	38.5	39.0	38.5	38.5
1	39.3	39.0	39.2	39.5
2			39.2	39.0
3	39.0	38.5	38.5	33.2
4	39.3	38.7	39.5	39.8
5			38.8	38.8
6	40.0	40.0	39.0	38.8
7	40.1	39.5	40.5	40.0
8	40.0	40.0	40.5	40.2
9	40.2	(1)	40.0	39.5
10	40.2		40.0	39.8
11	40.5		40.4	39.4
12	40.0		40.0	39.0
13	39.8		39.3	39.0
14	39.5		39.0	38.6

¹ Killed for transfer.

SUMMARY

A dog tick (*Dermacentor variabilis*) obtained from a farm on which a human case of spotted fever had occurred was proved to be infected in nature with the virus of Rocky Mountain spotted fever, eastern type.

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ENDEMIC TYPHUS FEVER VIRUS RECOVERED FROM WILD RAT TRAPPED AT TYPHUS FOCUS IN THE UNITED STATES

By R. E. DYER, *Surgeon*, W. G. WORKMAN, *Assistant Surgeon*, and A. RUMREICH, *Passed Assistant Surgeon, United States Public Health Service*

Recovery of the virus of endemic typhus from rat fleas caught at typhus foci has been reported from the United States (1) (2) (3), Manchuria (4), and Greece (5). Endemic typhus virus has been recovered from the brains of wild rats trapped in Mexico (6), Greece (7), Manchuria (4), Syria (8), and the United States (9).

At the time of the report of the recovery of endemic virus from the brains of a wild rat in the United States, complete data were not recorded. Such data are the subject of this report.

In April, 1932, rats were trapped on premises in Savannah, Ga., where cases of endemic typhus had recently occurred. The brains of these rats were emulsified in salt solution and injected intraperitoneally into guinea pigs. The animals inoculated with the brain emulsion of one of these rats developed the characteristic febrile and scrotal reactions of endemic typhus. The guinea pigs showing the typical reactions were sacrificed and material from them (blood and testicular washings) was inoculated into other guinea pigs. In this manner the virus was perpetuated in guinea pigs and maintained for 30 generations.

Of 481 guinea pigs inoculated with this strain of virus, 30 died of intercurrent infections and 85 per cent of the survivors showed the characteristic scrotal reaction. It was noted that 90 per cent of the guinea pigs inoculated with testicular virus and 78 per cent of those inoculated with blood virus developed genital involvement. Rickettsiæ were found in smears made from the tunica vaginalis of infected guinea pigs. Four rabbits inoculated with the virus developed agglutinins for *B. proteus* X₁₉, type O, as follows: Complete agglutination, 1:160, two rabbits; 1:320, one rabbit; and 1:640, one rabbit.

The nodal lesions of typhus were found in the brain of one guinea pig used in propagating the virus. The brains of seven guinea pigs were frankly negative, while in the brains of six suggestive changes were noted. All of the guinea pigs chosen for microscopic pathology had shown typical scrotal involvement during life. Complete cross-immunity (see Tables 1 and 2), was found to exist between the strain of virus isolated from the wild rat and known strains of endemic typhus virus.

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CROSS-IMMUNITY TESTS

TABLE 1.—Daily temperature records (centigrade)

Guinea pig W-2572	Guinea pig W-2582	Guinea pig Sav. 6817	Guinea pig Sav. 6818
• 38.7	• 38.9		
-----	38.5		
38.5	39.0		
38.8	39.8 R. & S.		
39.0	40.0 R. & S.		
39.0	---- R. & S.		
39.0	40.3 R. & S.		
39.5	40.3 R. & S.		
40.3 R. & S.	40.0 R. & S.		
39.8 R. & S.	39.5 R. & S.		
40.0 R. & S.	39.0		
39.5 R. & S.	39.0		
39.6 R. & S.			
39.5	-----		
	39.0		
• 39.0	• 38.8	• 38.8	• 39.1
39.0	38.5	38.5	38.8
39.2	39.3	39.5	39.0
39.5	39.0	40.8 R. & S.	40.5 R. & S.
39.5	39.0	39.8 R. & S.	39.5 R. & S.
39.4	38.5	40.7 R. & S.	40.0 R. & S.
38.5	38.8	40.2 R. & S.	39.6 R. & S.
38.7	38.6	40.0 R. & S.	40.0 R. & S.
39.5	38.5	39.5	40.0
39.0	38.5	39.5	39.8
39.1	38.6	39.4	
39.5	39.5		-----
39.2	39.5		39.4
38.5	38.0		
39.5	39.0		
39.2	38.6		
39.0	38.5		
39.4	39.2		

• Inoculated with known endemic typhus virus.

• Inoculated with virus recovered from wild rat.

R. & S. = Characteristic scrotal involvement.

TABLE 2.—Daily temperature records (centigrade)

Guinea pig Sav. 9543	Guinea pig Sav. 9579	Guinea pig 9812	Guinea pig 9813
• 39.0	• 39.4		
38.9	38.9		
39.2	39.0		
-----	40.2		
39.0	40.0 R. & S.		
38.7	40.2 R. & S.		
40.0 R. & S.	---- R. & S.		
38.7 R. & S.	39.5 R. & S.		
39.9 R. & S.	39.6 R. & S.		
39.8 R. & S.	39.5 R. & S.		
---- R. & S.	39.1		
39.5 R. & S.	39.4		
40.0	39.6		
39.6	39.0		
• 38.5	• 38.5	• 38.5	• 39.0
38.6	38.7	38.6	38.7
38.6	39.0	39.5	39.8
38.4	39.0	38.9	40.2
39.0	39.4	39.0	39.8 R. & S.
39.0	38.6	39.1	40.5 R. & S.
38.7	39.1	40.0 R. & S.	40.1 R. & S.
39.1	39.0	39.8 R. & S.	39.5 R. & S.
38.5	39.0	(*)	39.6
39.5	39.5		
38.5	38.8		
38.6	39.4		
39.0	39.4		
39.5	39.0		
38.6	39.0		

- Inoculated with virus recovered from wild rat.
- Inoculated with known endemic typhus virus.
- Killed for transfer.
- R. & S. = Characteristic scrotal involvement.

DEATHS DURING WEEK ENDED DECEMBER 10, 1932

[From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce]

	Week ended Dec. 10, 1932	Correspond- ing week, 1931
Data from 85 large cities of the United States:		
Total deaths.....	8,651	7,768
Deaths per 1,000 population, annual basis.....	12.3	11.2
Deaths under 1 year of age.....	609	627
Deaths under 1 year of age per 1,000 estimated live births ¹	51	49
Deaths per 1,000 population, annual basis, first 49 weeks of year.....	11.1	11.7
Data from industrial-insurance companies:		
Policies in force.....	69,666,314	74,343,907
Number of death claims.....	13,381	13,176
Death claims per 1,000 policies in force, annual rate.....	19.0	17.8
Death claims per 1,000 policies, first 49 weeks of year, annual rate.....	9.5	9.6

¹ 1932, 81 cities; 1931, 77 cities.

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

Reports for Weeks Ended December 17, 1932, and December 19, 1931

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended December 17, 1932, and December 19, 1931

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Dec. 17, 1932	Week ended Dec. 19, 1931	Week ended Dec. 17, 1932	Week ended Dec. 19, 1931	Week ended Dec. 17, 1932	Week ended Dec. 19, 1931	Week ended Dec. 17, 1932	Week ended Dec. 19, 1931
New England States:								
Maine.....	3	18		9		131	0	1
New Hampshire.....	1	1			1		0	0
Vermont.....	2					101	0	0
Massachusetts.....	40	67	10	7	110	294	1	3
Rhode Island.....	4	4	1			390	0	0
Connecticut.....	5	9	13	8	13	67	0	3
Middle Atlantic States:								
New York.....	49	156	45	113	715	447	3	7
New Jersey.....	41	35	32	8	230	46	0	1
Pennsylvania.....	92	146			208	681	2	6
East North Central States:								
Ohio.....	78	92	644	7	203	59	3	1
Indiana.....	67	77	1,078	15	24	38	2	9
Illinois.....	80	135	167	3	54	36	11	4
Michigan.....	31	58	57	3	271	43	3	3
Wisconsin.....	13	23	111		222	39	0	1
West North Central States:								
Minnesota.....	6	27	10		84	24	3	0
Iowa.....	27	45			3	3	0	1
Missouri.....	26	102	184	4	14	6	4	8
North Dakota.....	9	5			120	7	0	0
South Dakota.....	20	2	17			80	0	0
Nebraska.....	35	15	26	4	1	6	1	0
Kansas.....	28	54	41	1	6	11	2	0
South Atlantic States:								
Delaware.....	4	9	1		1	1	0	0
Maryland.....	26	58	171	24	6	6	1	2
District of Columbia.....	5	16	64	1			2	0
Virginia.....	39				147		0	
West Virginia.....	25	65	62	18	88	281	4	3
North Carolina.....	38	71	192	8	49	85	0	1
South Carolina.....	12	13	1,446	406	11	36	0	0
Georgia.....	36	26	3,954	49		1	0	0
Florida.....	23	9	38	1	1		1	1

See footnotes at end of table.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended December 17, 1932, and December 19, 1931—Continued

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Dec. 17, 1932	Week ended Dec. 19, 1931	Week ended Dec. 17, 1932	Week ended Dec. 19, 1931	Week ended Dec. 17, 1932	Week ended Dec. 19, 1931	Week ended Dec. 17, 1932	Week ended Dec. 19, 1931
East South Central States:								
Kentucky.....	29	62	2,537				1	1
Tennessee.....	25	73	3,767	25	5	19	2	2
Alabama ¹	27	71	7,034	19	3	7	2	2
Mississippi.....	6	21					1	0
West South Central States:								
Arkansas.....	13	30	4,272	15	1		0	0
Louisiana.....	26	44	4,945	9		8	2	2
Oklahoma ⁴	29	83	2,305	43	2	3	0	0
Texas ¹	104	106	498	14	232	4	0	0
Mountain States:								
Montana.....	1	1	1,388		449	104	1	1
Idaho.....	5	2	9		5	1	1	1
Wyoming.....			101		17	1	0	0
Colorado.....	6	3	313		8	4	0	0
New Mexico ¹	10	13	8	1	1	6	0	0
Arizona.....	5	11	174	5		1	1	0
Utah ¹	2	1	21	7			1	0
Pacific States:								
Washington.....	2	4	1		5	100	0	1
Oregon.....	1	1	769	57	45	3	1	0
California.....	64	105	1,271	104	27	99	1	4
Total.....	1,220	1,969	37,777	888	3,384	3,249	57	69

Division and State	Polio-myelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Dec. 17, 1932	Week ended Dec. 19, 1931	Week ended Dec. 17, 1932	Week ended Dec. 19, 1931	Week ended Dec. 17, 1932	Week ended Dec. 19, 1931	Week ended Dec. 17, 1932	Week ended Dec. 19, 1931
New England States:								
Maine.....	0	0	31	28	0	0	0	2
New Hampshire.....	0	0	21	12	0	0	0	0
Vermont.....	0	0	11	7	0	10	0	0
Massachusetts.....	2	8	360	369	0	0	7	5
Rhode Island.....	0	0	34	26	0	0	0	0
Connecticut.....	0	0	63	58	0	32	2	4
Middle Atlantic States:								
New York.....	1	15	594	476	3	5	8	23
New Jersey.....	3	5	213	142	0	0	5	3
Pennsylvania.....	6	9	651	468	0	0	7	28
East North Central States:								
Ohio.....	2	3	550	326	8	20	21	6
Indiana.....	0	0	118	95	5	10	4	5
Illinois.....	0	6	391	307	2	18	11	5
Michigan.....	0	3	297	240	0	14	6	8
Wisconsin.....	2	0	84	63	1	3	1	3
West North Central States:								
Minnesota.....	0	9	73	63	0	3	0	0
Iowa.....	0	3	47	43	64	83	0	1
Missouri.....	0	1	76	74	0	6	1	5
North Dakota.....	2	0	12	28	0	22	0	0
South Dakota.....	0	0	10	19	1	11	2	1
Nebraska.....	0	1	50	23	3	5	0	4
Kansas.....	1	1	88	82	1	3	0	3
South Atlantic States:								
Delaware.....	0	1	11	1	0	0	0	1
Maryland ²	0	0	190	87	0	0	7	11
District of Columbia.....	0	0	12	25	0	0	0	0
Virginia.....	0		78		0		13	
West Virginia.....	0	1	69	65	0	4	5	31
North Carolina.....	1	3	77	99	0	1	4	8
South Carolina ³	0	1	13	13	2	0	5	11
Georgia ¹	2	1	22	28	0	6	2	14
Florida ¹	0	1	8	4	0	1	5	0

See footnotes at end of table.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended December 17, 1932, and December 19, 1931—Continued

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Dec. 17, 1932	Week ended Dec. 19, 1931	Week ended Dec. 17, 1932	Week ended Dec. 19, 1931	Week ended Dec. 17, 1932	Week ended Dec. 19, 1931	Week ended Dec. 17, 1932	Week ended Dec. 19, 1931
East South Central States:								
Kentucky.....	0	0	40	93	1	0	7	6
Tennessee.....	2	0	39	64	19	4	12	21
Alabama.....	0	2	20	69	1	0	0	9
Mississippi.....	0	0	12	13	1	18	1	2
West South Central States:								
Arkansas.....	0	0	23	11	2	0	5	10
Louisiana.....	0	0	12	26	0	1	14	19
Oklahoma.....	0	0	34	57	4	1	0	13
Texas.....	0	0	82	73	7	7	6	12
Mountain States:								
Montana.....	0	1	10	36	0	2	1	3
Idaho.....	0	0	4	6	1	0	1	0
Wyoming.....	0	0	13	10	0	0	0	0
Colorado.....	0	0	25	21	0	0	0	2
New Mexico.....	0	0	18	8	0	0	1	2
Arizona.....	0	0	5	9	0	0	1	0
Utah.....	0	0	25	18	0	0	0	1
Pacific States:								
Washington.....	0	1	44	50	22	10	0	0
Oregon.....	0	0	20	19	7	11	2	0
California.....	3	2	111	127	1	2	8	6
Total.....	27	78	4,701	3,961	156	313	175	289

¹ New York City only.

² Week ended Friday.

³ Typhus fever, week ended Dec. 17, 1932, 17 cases: 1 case in South Carolina, 8 cases in Georgia, 1 case in Florida, 5 cases in Alabama, and 2 cases in Texas.

⁴ Figures for 1932 are exclusive of Oklahoma City and Tulsa.

⁵ Rocky Mountain spotted fever, week ended Dec. 17, 1932, 1 case in New Mexico.

SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of monthly State reports is published weekly and covers only those States from which reports are received during the current week:

State	Menin- gococ- cus menin- gitis	Diph- theria	Influ- enza	Malaria	Measles	Pel- lagra	Polio- mye- litis	Scarlet fever	Small- pox	Ty- phoid fever
<i>November, 1932</i>										
Alabama.....	4	237	2,206	133	14	14	2	189	2	29
Arkansas.....		135	387	70	9	39	1	161	5	36
Delaware.....		14	1		2		0	17	0	
Florida.....		132	17	51	1	2	0	30	0	9
Maryland.....	1	79	50		21	2	7	336	0	36
Massachusetts.....	10	160	14		279	1	4	1,039	0	12
Michigan.....	9	89	57	2	814		7	1,004	11	44
Minnesota.....	3	72	3		348		6	334	4	18
New Jersey.....	2	107	54		590		15	618	0	25
Pennsylvania.....	13	488		3	889	2	46	2,017	0	125
South Carolina.....		291	1,787	1,033	52	127	3	57	2	30

November, 1932

	Cases	Cases	Tetanus:	Cases
Actinomycosis:		Lethargic encephalitis—Contd.	Maryland.....	3
Massachusetts.....	1	Minnesota.....	Massachusetts.....	1
Chicken pox:		New Jersey.....	Minnesota.....	1
Alabama.....	62	Pennsylvania.....	Pennsylvania.....	4
Arkansas.....	122	South Carolina.....	South Carolina.....	3
Delaware.....	33	Mumps:	Trachoma:	
Florida.....	1	Alabama.....	Arkansas.....	26
Maryland.....	430	Arkansas.....	Massachusetts.....	3
Massachusetts.....	1,127	Delaware.....	Pennsylvania.....	1
Michigan.....	1,735	Florida.....	Trichinosis:	
Minnesota.....	1,017	Maryland.....	New Jersey.....	1
New Jersey.....	1,147	Massachusetts.....	Tularaemia:	
Pennsylvania.....	3,668	Michigan.....	Arkansas.....	4
South Carolina.....	106	New Jersey.....	Maryland.....	6
Dengue:		Pennsylvania.....	Michigan.....	3
South Carolina.....	2	South Carolina.....	Minnesota.....	7
Diarrhea:		Ophthalmia neonatorum:	Pennsylvania.....	2
Maryland.....	14	Arkansas.....	South Carolina.....	1
South Carolina.....	267	Massachusetts.....	Typhus fever:	
Dysentery:		New Jersey.....	Alabama.....	17
Maryland.....	8	Pennsylvania.....	Maryland.....	2
Massachusetts.....	24	South Carolina.....	South Carolina.....	1
Michigan.....	4	Paratyphoid fever:	Undulant fever:	
Minnesota.....	1	South Carolina.....	Alabama.....	1
Minnesota (amebic).....	1	Psittacosis:	Delaware.....	1
Pennsylvania.....	4	Minnesota.....	Maryland.....	3
German measles:		Puerperal septicemia:	Massachusetts.....	1
Maryland.....	10	Pennsylvania.....	Michigan.....	2
Massachusetts.....	25	Rabies in animals:	Minnesota.....	3
New Jersey.....	32	New Jersey.....	New Jersey.....	3
Hookworm disease:		South Carolina.....	Vincent's angina:	
South Carolina.....	52	Rabies in man:	Maryland.....	10
Impetigo contagiosa:		Alabama.....	Whooping cough:	
Maryland.....	62	Michigan.....	Alabama.....	75
Lead poisoning:		Scabies:	Arkansas.....	61
Massachusetts.....	4	Maryland.....	Delaware.....	21
New Jersey.....	1	South Carolina.....	Maryland.....	101
Lethargic encephalitis:		Septic sore throat:	Massachusetts.....	296
Alabama.....	2	Maryland.....	Michigan.....	921
Michigan.....	6	Massachusetts.....	Minnesota.....	125
		Michigan.....	New Jersey.....	305
			Pennsylvania.....	939
			South Carolina.....	110

WEEKLY REPORTS FROM CITIES

City reports for week ended December 10, 1932

State and city	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet fever cases	Small-pox cases	Tuberculosis deaths	Typhoid fever cases	Whooping cough cases	Deaths, all causes
		Cases	Deaths								
Maine:											
Portland.....	1		0	0	0	11	0	0	0	5	20
New Hampshire:											
Concord.....	0		0	0	0	1	0	3	0	0	7
Nashua.....	0		0	0	0	0	0	0	0	0	
Vermont:											
Barre.....	0		0	0	1	0	0	1	0	0	2
Burlington.....	3		0	0	0	2	0	0	0	0	5
Massachusetts:											
Boston.....	13		0	35	21	82	0	9	1	61	221
Fall River.....											
Springfield.....	0		1	3	0	4	0	2	0	5	33
Worcester.....	2		0	1	2	22	0	1	0	0	47
Rhode Island:											
Pawtucket.....	0		0	0	0	0	0	0	0	0	15
Providence.....	0		2	0	5	18	0	2	1	36	70
Connecticut:											
Bridgeport.....	0	1	1	16	4	3	0	1	1	4	37
Hartford.....	1	2	1	2	3	4	0	2	0	3	34
New Haven.....	0		0	0	3	3	0	0	0	8	35
New York:											
Buffalo.....	2	2	0	4	30	44	0	5	0	22	140
New York.....	55	30	12	230	139	198	0	76	8	129	1,439
Rochester.....	0		1	0	8	22	0	1	1	3	52
Syracuse.....	0		0	3	3	20	0	2	0	9	59
New Jersey:											
Camden.....	6		1	0	2	6	0	3	0	2	35
Newark.....	5	14	0	36	11	17	0	5	0	13	103
Trenton.....	2		1	1	2	7	0	2	0	6	46
Pennsylvania:											
Philadelphia.....	5		1	23	30	122	0	29	1	9	515
Pittsburgh.....	12	35	12	0	60	38	0	11	3	14	264
Reading.....	0		0	15	1	2	0	1	0	7	28
Ohio:											
Cincinnati.....	1	2	5	0	17	18	0	3	1	3	147
Cleveland.....	9	275	10	4	34	79	0	9	3	25	233
Columbus.....	0	145	3	184	10	6	0	4	1	2	84
Toledo.....	2	7	3	8	6	26	0	3	0	6	76
Indiana:											
Fort Wayne.....	10		1	0	4	1	0	1	0	0	
Indianapolis.....	2		5	7	14	8	0	8	0	3	
South Bend.....	0		0	0	3	4	0	0	0	2	15
Terre Haute.....	2		1	0	4	2	0	0	0	0	24
Illinois:											
Chicago.....	13	77	19	66	72	205	0	42	1	31	752
Springfield.....											
Michigan:											
Detroit.....	14	26	3	42	23	82	0	17	1	96	242
Flint.....	0		0	0	5	0	0	0	0	0	18
Grand Rapids.....	0		2	0	3	5	0	0	1	41	37
Wisconsin:											
Kenosha.....	0		0	0	0	5	0	1	1	1	8
Madison.....	1		0	0	1	0	0	0	0	1	
Milwaukee.....	4	2	2	4	8	22	0	7	0	17	106
Racine.....	0		0	0	1	3	0	0	0	5	20
Superior.....	0		1	0	1	0	0	0	0	0	12
Minnesota:											
Duluth.....	0		0	0	6	4	0	1	0	0	25
Minneapolis.....	1		4	70	16	18	0	5	0	11	116
St. Paul.....	1		0	2	8	9	0	1	0	26	52
Iowa:											
Des Moines.....	12			0		10	0		0	0	30
Sioux City.....	0			0		2	0		0	2	
Waterloo.....	0			0		0			0	0	
Missouri:											
Kansas City.....	1	5	1	25	9	19	0	8	0	1	111
St. Joseph.....	3		2	1	12	2	0	3	0	0	
St. Louis.....	19	6	7	2	15	26	0	10	1	1	219
North Dakota:											
Fargo.....	0		0	2	3	1	0	0	0	0	12
Grand Forks.....	0		0	21	0	0	0	0	0	0	
South Dakota:											
Aberdeen.....	1		0	0	0	1	0	0	0	0	
Nebraska:											
Omaha.....	10		0	0	0	8	0	0	0	0	52

City reports for week ended December 10, 1932—Continued

State and city	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet fever cases	Smallpox cases	Tuberculosis deaths	Typhoid fever cases	Whooping cough cases	Deaths, all causes
		Cases	Deaths								
Kansas:											
Topeka.....	3		0	2	3	2	0	1	0	3	10
Wichita.....	0		0	0	3	6	0	2	0	0	26
Delaware:											
Wilmington.....	0		0	0	5	2	0	1	1	2	28
Maryland:											
Baltimore.....	2	33	1	6	22	69	0	17	1	26	207
Cumberland.....	0		0	0	0	3	0	1	0	0	13
Frederick.....	0		0	0	0	1	0	0	0	0	2
Dist. of Columbia:											
Washington.....	10	13	2	2	15	26	0	14	0	11	159
Virginia:											
Lynchburg.....	2		0	0	5	4	0	0	0	5	10
Norfolk.....	0		0	0	5	4	0	0	0	6	26
Richmond.....	1		1	0	4	6	0	4	0	0	51
Roanoke.....	5		0	0	0	5	0	0	0	0	12
West Virginia:											
Charleston.....	0	9	0	0	1	4	0	0	0	1	9
Huntington.....	4			17		3	0		0	0	
Wheeling.....	0	3	0	58	9	4	0	1	0	2	25
North Carolina:											
Raleigh.....											
Wilmington.....	0		0	0	0	2	0	1	1	0	6
Winston-Salem.....	0	2	0	1	1	0	0	0	0	1	11
South Carolina:											
Charleston.....	0	56	2	0	1	1	0	0	1	0	20
Columbia.....	2		0	1	1	0	1	2	0	0	11
Georgia:											
Atlanta.....	2	1,296	14	1	9	5	0	0	0	6	107
Brunswick.....	0		0	0	0	0	0	1	0	0	4
Savannah.....	0	9	1	0	3	3	0	1	0	1	38
Florida:											
Miami.....	3		0	0	0	1	0	1	0	0	20
Tampa.....	7		0	0	2	0	0	0	0	0	23
Kentucky:											
Covington.....											
Lexington.....	1	28	0	0	2	2	0	5	0	0	23
Louisville.....	7	156	0	4	12	14	0	4	0	0	91
Tennessee:											
Memphis.....	3		3	1	8	6	0	4	4	0	78
Nashville.....	7		2	0	3	6	0	3	0	0	42
Alabama:											
Birmingham.....	4	1,332	5	0	7	12	0	2	1	0	71
Mobile.....	4	125	5	0	4	1	0	0	0	0	27
Montgomery.....	1	90		0		1	0		0		
Arkansas:											
Fort Smith.....	3			0		2	0		0		
Little Rock.....	3	18	0	0	1	1	2	0	1	0	1
Louisiana:											
New Orleans.....	15	373	58	0	46	7	0	17	0	0	256
Shreveport.....	3		0	0	8	0	0	0	0	0	44
Oklahoma:											
Oklahoma City.....	3	600	1	0	3	17	0	2	0	0	38
Tulsa.....	1		0	0	0	0	0	0	0	0	1
Texas:											
Dallas.....	14	7	6	0	2	14	0	0	0	0	55
Fort Worth.....	7		1	4	9	11	0	1	0	0	45
Galveston.....	4		0	0	3	1	0	1	1	0	18
Houston.....	11		6	0	17	6	0	1	0	0	73
San Antonio.....	5	7	4	0	16	5	0	5	0	0	74
Montana:											
Billings.....	0		0	0	0	0	0	0	0	0	0
Great Falls.....	0		0	160	0	0	0	0	0	0	3
Helena.....	0	249	0	0	0	0	0	0	0	0	3
Missoula.....	0		0	0	0	0	0	0	0	0	5
Idaho:											
Boise.....	0		0	7	0	1	7	0	0	0	7
Colorado:											
Denver.....	3		9	6	31	11	0	4	0	1	112
Pueblo.....	0		0	0	0	0	0	0	0	0	5
New Mexico:											
Albuquerque.....	0		1	0	0	1	0	5	0	2	9
Arizona:											
Phoenix.....	0		0	0	1	0	0	5	0	0	

City reports for week ended December 10, 1932—Continued

State and city	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet fever cases	Small-pox cases	Tuberculosis deaths	Typhoid fever cases	Whooping cough cases	Deaths, all causes
		Cases	Deaths								
Utah:											
Salt Lake City.....	0		5	2	5	7	0	2	0	1	38
Nevada:											
Reno.....	0		0	0	2	0	0	0	0	0	7
Washington:											
Seattle.....	0	1		0		4	0		3	7	
Spokane.....	0			0		0	0		0	0	
Tacoma.....	0		0	0	0	0	0	0	0	0	30
Oregon:											
Portland.....	0	6	1	0	7	5	3	4	0	0	71
Salem.....	0	16		11		0	1		0	0	
California:											
Los Angeles.....	28	422	10	26	28	36	15	18	0	34	302
Sacramento.....	0	7	2	0	10	1	0	6	0	0	39
San Francisco.....	3	101	5	2	12	8	9	9	0	45	152

State and city	Meningococcus meningitis		Polio-myelitis cases	State and city	Meningococcus meningitis		Polio-myelitis cases
	Cases	Deaths			Cases	Deaths	
Massachusetts:				Michigan:			
Boston.....	1	0	0	Detroit.....	2	1	0
New York:				Nebraska:			
New York.....	1	1	1	Omaha.....	1	0	0
Rochester.....	1	0	0	Tennessee:			
New Jersey:				Memphis.....	1	0	0
Newark.....	0	0	1	Alabama:			
Pennsylvania:				Mobile.....	1	0	0
Philadelphia.....	0	0	3	Utah:			
Pittsburgh.....	2	0	0	Salt Lake City.....	1	1	1
Ohio:				Washington:			
Cleveland.....	0	0	1	Seattle.....	1	0	1
Indiana:				California:			
Indianapolis.....	2	0	0	Los Angeles.....	0	0	1
Illinois:				San Francisco.....	0	1	0
Chicago.....	6	5	1				

1. Lethargic encephalitis—Cases: New York, 1; Chicago, 1; Washington, 1; Birmingham, 1; Los Angeles 1.
 2. Pellagra—Cases: Charleston, S. C., 1; Atlanta, 1; Savannah, 2; Birmingham, 1; Dallas, 1; Los Angeles 1.
 3. Typhus Fever—Cases: New York, 2; Savannah, 4; Montgomery, 1.

FOREIGN AND INSULAR

ALASKA

Cordova—Poliomyelitis.—Information was received December 15, 1932, that 6 cases of poliomyelitis, with 1 death, were reported in Cordova, Alaska. All patients and suspects had been quarantined and no suspect or person known to have been exposed was allowed on boats. Schools had been closed and every precaution was being taken. About one week had elapsed without the development of new cases.

CANADA

Provinces—Communicable diseases—Week ended December 3, 1932.—The Department of Pensions and National Health of Canada reports cases of certain communicable diseases for the week ended December 3, 1932, as follows:

Disease	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Total
Cerebrospinal meningitis.....			1						1
Chicken pox.....	16	2	129	331	99	59		63	699
Diphtheria.....	5	3	31	10	3	6		2	69
Erysipelas.....			1		1			1	3
Influenza.....			1	7				1,174	1,182
Measles.....	3	4	101	470	29	2		11	629
Mumps.....	4			93	16			1	114
Pneumonia, all forms.....				10				11	21
Poliomyelitis.....			4	1					5
Scarlet fever.....	4	17	46	62	21	14		13	177
Trachoma.....					1				1
Tuberculosis.....	1		52	38	17	6		25	139
Typhoid fever.....			12	1	5	3		2	23
Undulant fever.....				1					1
Whooping cough.....	4		123	82	26	14		7	256

CUBA

Habana—Communicable diseases—Four weeks ended December 3, 1932.—During the four weeks ended December 3, 1932, certain communicable diseases were reported in Habana, Cuba, as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Diphtheria.....	28	3	Scarlet fever.....	6	
Leprosy.....	1		Tuberculosis.....	17	
Malaria.....	23	2	Typhoid fever.....	9	3
Measles.....	3				

GREAT BRITAIN

England and Wales—Vital statistics—July–September, 1932.—During the third quarter of the year 1932, 156,302 births and 97,951 deaths were registered in England and Wales. The following statistics are taken from the Quarterly Return of Births, Deaths, and Marriages, issued by the Registrar-General of England and Wales. The figures are provisional.

Birth and death rates in England and Wales, July to September, 1932

Annual rates per 1,000 population:

Live births.....	15.5
Stillbirths.....	.62
Deaths, all causes.....	9.7
Deaths from—	
Measles.....	.03
Scarlet fever.....	.01
Whooping cough.....	.05

Annual rates per 1,000 population—Contd.

Deaths from—Continued.	
Diphtheria.....	0.05
Influenza.....	.04
Deaths per 1,000 live births:	
Diarrhea and enteritis (under 2 years)...	7.3
Total deaths under 1 year.....	49.0

England and Wales—Infectious diseases—Thirteen weeks ended October 1, 1932.—During the 13 weeks ended October 1, 1932, cases of certain infectious diseases were reported in England and Wales as follows:

Disease	Cases	Disease	Cases
Diphtheria.....	9,317	Puerperal pyrexia.....	1,321
Ophthalmia neonatorum.....	1,117	Scarlet fever.....	17,795
Pneumonia.....	6,012	Smallpox.....	234
Puerperal fever.....	483	Typhoid fever.....	909

MEXICO

Tampico—Communicable diseases—November, 1932.—During the month of November, 1932, certain communicable diseases were reported in Tampico, Mexico, as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Diphtheria.....	2	1	Paratyphoid fever.....	3	1
Enteritis, various.....	85	75	Tuberculosis.....		32
Influenza.....	73	3	Typhoid fever.....	5	1
Malaria.....	892	27	Whooping cough.....	33	

PUERTO RICO

Communicable diseases—Four weeks ended November 5, 1932.—During the four weeks ended November 5, 1932, cases of certain communicable diseases were reported in Puerto Rico as follows:

Disease	Cases	Disease	Cases
Bronchitis.....	127	Ophthalmia neonatorum.....	9
Broncho-pneumonia.....	4	Paratyphoid fever.....	1
Chicken pox.....	44	Pellagra.....	4
Diphtheria.....	53	Pneumonia.....	15
Dysentery.....	410	Puerperal fever.....	3
Erysipelas.....	4	Syphilis.....	151
Filariasis.....	3	Tetanus.....	3
Impetigo contagiosa.....	1	Tetanus, infantile.....	11
Influenza.....	2,559	Tuberculosis.....	367
Malaria.....	3,694	Typhoid fever.....	12
Measles.....	289	Whooping cough.....	99
Mumps.....	40		

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

From medical officers of the Public Health Service, American consuls, International Office of Public Hygiene, Pan American Sanitary Bureau, health section of the League of Nations, and other sources. The reports contained in the following tables must not be considered as complete or final as regards either the list of countries included or the figures or the particular countries for which reports are given.

CHOLERA

[C indicates cases; D, deaths; F, present]

Place	Week ended—																	
	May 28— June 4, 11, 18, 1932		June 20— July 6, 13, 20, 1932		July 24— Aug. 7, 14, 21, 27, 1932		September, 1932				October, 1932				November, 1932		December, 1932	
Bahobistan.....																		
China:																		
Amoy.....																		
Canton.....																		
Dairen. ¹																		
Hankow.....																		
Hong Kong.....																		
Kwantung Leased Territory—District of Port Arthur.....																		
Macao.....																		
Nanking.....																		
Newchwang.....																		
Shanghai.....																		
Swatow. ²																		
Tientsin.....																		
Tsinan—Shantung Province.....																		
Tsingtao.....																		

¹ 129 cases, 78 deaths, in Dairen, up to Aug. 28, 1932.

² Local unofficial reports included 159 deaths from cholera in Swatow, China, from June 10 to 30, 1932.

